DOCUMENT RESUME

ED 324 680 CS 212 534

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TITLE Writing Across the Curriculum: A Case Study of Faculty Practices at a Research University.
PUB DATE 90
NOTE 21p.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS College Faculty; Higher Education; *Instructional Effectiveness; Interdisciplinary Approach; Teaching Methods; Writing (Composition); *Writing Across the Curriculum; *Writing Instruction; *Writing Processes; Writing Research; *Writing Strategies; Writing Teachers
IDENTIFIERS *Process Approach (Writing); University of Texas Austin

ABSTRACT

This study examined the pedagogical practices of interdisciplinary faculty teaching single-subject approach writing-across-the-curriculum (WAC) courses at a research university (University of Texas) to determine the extent to which the faculty practice the process approach to writing instruction. Data were gathered from course syllabi, assignment handouts, and semesterly reports of faculty members teaching 27 WAC courses in natural sciences and engineering. Results revealed that 12 courses did not use a single process approach practice, seven courses used one, six courses used two, and two courses used three practices. Instructors of these WAC courses ignored many opportunities to blend process approach practices into their courses. Revising and sequencing of assignments were the two most frequently used practices while journal writing and peer critiquing were the least used. Results also revealed that the focus in these WAC courses was on quantity of writing (based on a predicted word count) that could be accomplished during a semester rather than on current practices to writing pedagogy. Findings suggest that the expectation placed on interdisciplinary faculty, who are largely unaware of the current composition research and pedagogy, to teach writing appears to be rather unrealistic. (Three tables of data are included; 20 references are attached.) (KEH)

Writing Across the Curriculum:
A Case Study of Faculty Practices at a Research University

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Abstract. This study examined the pedagogical practices of faculty members teaching 27 writing across the curriculum (WAC) courses in the College of Natural Sciences and the College of Engineering at The University of Texas at Austin. The purpose of the study was to determine the extent to which the faculty members practiced the process approach to writing instruction. The sample consisted of course syllabi, assignment handouts, and semesterly reports of the faculty to academic Deans. The study concludes that the emphasis of the WAC courses in the two Colleges at Texas appear to be on the quantity of writing than on the process approach.

The writing across the curriculum (WAC) movement aims to improve the thinking and reasoning skills of students by encouraging faculty from all disciplines to use writing more often and more thoughtfully in their classrooms. A survey conducted by the Modern Language Association in 1985 revealed that 47 percent of four-year colleges and universities surveyed had some program in writing across the curriculum.

Kinneavy (1983) describes the two main approaches to WAC programs as the single-subject approach and the centralized writing department approach. In the first, writing courses are conducted by specific subject departments, taught by faculty who are experts in the fields in which the writing is being done. In the second approach, academic writing courses are taught by faculty members of the English department. Although the faculty may be specialists in composition, they may only have a general knowledge of academic subject matter.

In a recent article in *College English,* Catherine Blair (1988) argues that English departments should have no special role in WAC programs. According to Blair, when English faculty teach academic writing, what is taught is the English department's own "brand" of writing (usually literary analysis), not the discourse of other disciplines. A similar view has been expressed by Spack (1988), who argues that since English teachers are largely unaware of the nature of academic writing, "the teaching of writing in the disciplines should be left to the teachers of [those] disciplines" (p. 29).

The views expressed by Blair and Spack are based on the assumption that interdisciplinary faculty actually *teach* writing. In fact, in WAC programs at smaller institutions like Beaver College (Kinneavy, 1987), Bucknell University (Blair, 1988), and Colgate University (Howard, Hess, and Darby, 1989), interdisciplinary faculty appear to practice current writing pedagogy. However, Fulwiler (1984), who coordinated a pioneering WAC program at Michigan Technological University and later served as a consultant to programs at other universities, admits that "increased teaching loads, large classes, pressure to research [and] publish" (p. 119) in their own fields may discourage interdisciplinary faculty from taking on the added burden of writing instruction.

In this context, an important factor to be considered is the definition of writing instruction. Until well into the 1960s, the focus of writing instruction was on the correction and evaluation of student writing, with emphasis being placed on writing style. The composing process was almost entirely the students' responsibility: "the assignment went in at one end, and out came the final paper at the other" (Bizzell, 1986, p. 50). However, with increasing numbers of underprepared students entering higher education, student writing began to show more than stylistic deficiencies. Grammatical and mechanical errors became prevalent, and the ill conceived ideas in some papers even brought the students' thinking and reasoning skills into question. As a result, teachers began to realize that instead of grading finished papers, they would have to work alongside their students during the writing process. Accordingly, the process approach to writing instruction, which

includes pre-writing exercises, journal writing, peer critiques of papers, revision exercises, multiple drafts of papers, and teacher-student conferences, began to be used in writing classes. In fact, one of the goals of the WAC movement is said to be the promotion of "process-oriented composition pedagogy" (Fulwiler and Young, 1990, p. 2).

To what extend do interdisciplinary faculty involved in the WAC movement adopt the process approach when teaching writing? Published research in this area appears to be minimal, but two surveys conducted at the Michigan Technological University are noteworthy. In the first, Fulwiler, Gorman, and Gorman (1986) attempted to determine short-term attitudinal changes among interdisciplinary faculty who had attended WAC workshops. An analysis of the responses showed that the the faculty appeared to favor the process approach to writing pedagogy, which had been advocated during the workshops. In the second survey, which is of greater relevance to the topic of my study, Kalmbach and Gorman (1986) surveyed 71 faculty members from various disciplines to determine how the WAC workshops had influenced actual classroom practices. Faculty were queried on fifteen mainly process-oriented curricular practices such as pre-writing, journal writing, ungraded writing, peer critiquing, collaborative writing, etc. The responses indicated significant increases in pre-writing activities, ungraded writing, peer critiquing, and in the writing of multiple drafts of papers.

Both surveys used questionnaires, the most frequently used data gathering instrument in such research. However, researchers who used questionnaires in previous WAC research have noted the shortcomings of the instrument. For instance, Eblen (1983) notes that "self reports may blend respondents' beliefs and intentions with actual practice" (p. 347), while Behrens (1978) states that questionnaire surveys could be a more accurate measure of "what people think . . . than what they actually do" (p. 60), thereby reducing the reliability of the data. This brings into question the observations of the two Michigan Tech surveys noted earlier.

Course syllabi and assignment handouts, on the other hand, often provide more reliable indications of pedagogical practices. Instructional specifications on writing are first observed in course syllabi, and these specifications are supplemented by assignments. For instance, provisions for ungraded writing, revising, peer critiquing, conferencing, and the sequencing of writing assignments are often explicitly stated in course syllabi, while assignment handouts may indicate the requirement for multiple drafts of student papers.

Accordingly, the purpose of this study was to analyze course syllabi and assignment handouts given by interdisciplinary faculty teaching single-subject approach WAC courses at a research university in order to determine the extent to which the faculty practice the process approach to writing instruction.

The Present Study

Location The study was conducted at The University of Texas at Austin, which the Carnegie Classification (1987) has categorized as a Public Research University I. The University has approximately 2300 full time faculty, 40,500 undergraduate students, and 10,000 graduate students. For two reasons, The University of Texas at Austin is an ideal location for WAC research. First, Texas has offered an extensive single subject department type of WAC program since 1983. In the Fall semester of 1989, for instance, the WAC program offered courses at all the eleven Colleges and Schools of the University. Second, the University has clearly defined the purpose of the WAC program, and established criteria on which courses are selected to be included in the program.

At Texas, the courses in the WAC program are labeled substantial writing component courses, and are listed accordingly in the published course schedule for each semester. In the Fall of 1983, the University's President approved the following criteria for the program.

> II. University-wide minimum criteria for courses to be certified as having a substantial writing component
>
> Each course certified as having a substantial writing component must include at least three writing activities per semester, exclusive of in-class quizzes and examinations. These three or more writing activities must total approximately 16 typewritten, double-spaced pages (about 4000 words). A major rewriting of a paper (requiring additional original writing, not merely editing) can be considered a separate writing activity.
>
> During the course, each student must receive a timely and detailed critique following each writing activity concerning the quality of the student's written expression and ways in which the paper can be improved.
>
> The quality of the student's written expression must be an important component in determining the student's course grade. (*Teaching Through Writing,* n.p.)

In accordance with this policy, students are required to take six credit hours of coursework certified as having a substantial writing component:

> The Basic Education Requirement in writing prescribes that all undergraduate students take English 306 and 316K. In addition to the English courses, a student must complete six semester,ester hours in

courses certified as having a substantial writing component. Three ofthe six semester hours must be at upper-division level. (*Course Schedule,* Fall, 1986)

When the WAC program was first instituted, the Center for Teaching Effectiveness of the University was charged with providing materials and training for faculty who were to teach these courses. Accordingly, the Center conducted a series of workshops for faculty scheduled to teach WAC courses. Although the initial sessions were well attended, interest waned after about two years, and no workshops have been held since then.

In addition to the workshops, the Center for Teaching Effectiveness has produced two handbooks for teachers of WAC courses. The first, *Teaching Through Writing: A Resourcebook for Instructors of Substantial Writing Courses* , is a compendium of articles and suggestions on teaching WAC courses. The second, *A Substantial Writing Course Handout Sampler* , contains handouts which instructors could reproduce and distribute among their students. The handouts describe how to produce a rough draft, how to edit, how to research the literature, how to evaluate instructors' comments, and other related matters.

At Texas, the university administration monitors the WAC program by requiring academic Deans to submit a syllabus for each WAC course, a description of the three or more writing activities required for each course, and a statement by each course instructor on the procedures used in the evaluation of student writing. Information on class size and a brief statement by the instructor summarizing course outcomes are also required. Accordingly, the Deans of the various Colleges and Schools at Texas require all instructors teaching WAC courses to submit the above information, which is then sent to the University's Vice President for Academic Affairs and Research.

Data Collection In order to keep the study within reasonable limits, the sample was limited to syllabi and assignments given in WAC courses in the College of Natural Sciences and the College of Engineering at Texas. During preceding academic years, the number of WAC courses offered by the two Colleges were as follows:

	Fall, 1987	Spring, 1988	Fall, 1988	Spring, 1989	Fall,1989
Natural Sciences	21	23	19	19	16
Engineering	18	18	18	18	18

Since the Deans of all Colleges and Schools require instructors of WAC courses to submit course syllabi and assignments, I contacted the Dean of the College of Natural Sciences and the Dean of the College of Engineering and requested access to files containing course syllabi, assignments, and semesterly reports of instructors. On examining the files that were made available to me, I noted that, despite the guidelines specified by the University administration, few instructors

of WAC courses had provided their respective Deans with the required information. Some instructors had not submitted their course syllabi, and others, instead of submitting detailed descriptions of assignments, had merely listed the writing tasks they prescribe. As a result, the material obtained from the files of the respective Deans was insufficient for this study. I therefore telephoned the instructors whose syllabi and assignments were not on file, informed them of the scope and purpose of my study, and requested course syllabi and assignments. Since most of the instructors responded favorably, the sample finally collected consisted of 27 syllabi and 127 assignments. The Courses from which syllabi and assignments were obtained, and the number of assignments obtained from each course, are listed in Table 1.

Insert Table 1 here.

Two courses listed under the College of Natural Sciences could not be considered for the study because one gave only oral assignments and the second was a section of a parallel course offered in the same Department. Of the courses offered in the College of Engineering, one course was cross-listed thrice, another was a technical communication course (and hence taught by an instructor who had majored in English), and a third was a parallel course. As a result, although the College of Engineering consistently offered 18 WAC courses each semester, only 15 courses were suitable for this study.

While some course instructors, such as of Lab Methods in Cell Biology, Microbiology, and Petrophysics and Fluid Flow, sent me all the assignments given in their courses, others did not send all the assignments. Thus, the number of assignments listed for each course in Table 1 is not necessarily the total number of assignments given in that course during a semester.

Data Analysis In keeping with the Kalmbach and Gorman (1986) survey quoted earlier, the purpose of this study was to determine the following aspects of the process approach to writing instruction as indicated in the syllabi, assignments, and semesterly reports of instructors collected for the study.

1. Pre-writing
2. Journal writing
3. Ungraded writing
4. Revising
5. Peer critiquing
6. Teacher-student conferencing
7. Writing of multiple drafts of papers

8. Writing proposals
9. Collaborative writing
10. Writing for an audience
11. Sequencing of Assignments

Pre-writing is often a spontaneous, informal activity, and is therefore rarely mentioned in course syllabi and assignments, while provisions for revision also indicate the writing of multiple drafts of papers; hence, revision and multiple-drafts could not be considered as two separate practices. Finally, teacher-student conferencing in interdisciplinary courses may focus on the subject matter content of student papers, instead of on the writing. As such, although all the syllabi did indicate office hours kept by faculty, teacher-student conferencing was not a practice considered for the study. Accordingly, of the eleven faculty practices listed above, only eight--journal writing, ungraded writing, revising, peer critiquing, writing proposals, collaborative writing, writing for an audience, and the sequencing of assignments were considered.

The syllabi and assignments were analyzed through close readings of the text. For instance, a statement like "the paper will be reviewed and returned to you for revision" would indicate provisions for revision. "student projects and documentation are also evaluated by other students" would indicate provisions for peer critiquing; and "This paper will basically be an expansion of your first paper" would indicate the sequencing of assignments. In addition to the information contained in the syllabi and assignments, the semester reports submitted to the academic Deans by course instructors were used in the determination of faculty practices.

Results The faculty practices noted during the analyses of course syllabi, assignments, and semesterly reports of instructors will now be identified and described.

Journal Writing Only one course, Software Engineering from Natural Sciences, appeared to encourage the keeping of a journal. The syllabus stated that 5% of extra credit would be given for "keeping a daily log of project activities, time spent, reflections on success and failure, etc." Although the Projects Lab course in Electrical Engineering also required a daily log, it was an Engineering Laboratory Notebook, which merely listed a chronological record of the students' activities in the format required in industry.

Ungraded Writing Two courses, both from Natural Sciences, indicated this practice. The History and Philosophy of Astronomy syllabus indicated "several in-class writing activities, discussed but ungraded," and the Introduction to Home Economics Education course required two

assignments, an Autobiography and a Statement of Personal Philosophy of Home Economics Education, which would "not be used in determining the final grade", which had to be completed and submitted by the students.

Revising Seven courses either encouraged or required students to revise their papers. Two of the courses, Mineral Resources and Introduction to Home Economics Education, were from Natural Sciences. One assignment from Mineral Resources stated that the paper would be reviewed and returned to the students for "revisions and writing of additional sections." In the Home Economics course, the assignment for a research paper stated that rewriting was required if the paper received a grade less than a B.

The syllabi for Chemical Engineering Fundamentals Lab and The Process and Projects Lab stated that reports which received less than 60 points must be rewritten. In the Contracts and Specification course, revision was not a requirement, but an option : "If you receive a B on the specification, you may choose to write a second specification to raise your grade." The syllabus for Engineering Economy and Construction Management indicated that papers would be assigned in a manner that would provide students feedback and "an opportunity for revision". In the report to the Dean, the instructor for Petroleum Engineering Design noted that "reports were corrected and returned to the students for editing, resubmission, and grading."

Peer Critiquing Only the Software Engineering course from Natural Sciences showed this practice. The syllabus stated that "student projects and documentation are also evaluated by other students."

Writing Proposals Two courses from Natural Sciences, Mineral Resources and Introduction to Home Economics Education, required the submission of proposals before students could begin a research paper assignment.

Collaborative Writing Two course from Engineering allowed collaborative writing. In Contracts and Specifications, students were "encouraged to assist each other in preparing their separate sections" of lab reports. In Petroleum Engineering Design, the syllabus indicated that the students could submit a "final written group report."

Writing for an Audience One course from Natural Sciences and two from Engineering explicitly stated that the students would be writing for an audience, factual or hypothetical, other than the course instructor.

In Microbiology, students were asked to write a short research article suitable for

publication in a specified journal in the field. In Engineering Economy and Construction Management, students were required to report to Corporate Management, who were characterized as having "a strong technical background." The *General Guidelines to Laboratory Reports*, supplied to all students in the Measurements and Instrumentation course in Civil Engineering, explained that students would be writing two types of lab reports in the course. The first, "academic" lab reports, would be written for the course instructor, and the second, "industrial" lab reports, would be written for a "variety of people some of whom will share [the student's] technical expertise and some of whom will not."

Sequencing of Assignments Seven courses, two from Natural Sciences and five from Engineering, arranged at least some assignments in sequence.

In Microbiology, the last writing assignment in the course was identified as "basically an expansion of [the students'] first paper." In Special Studies in Advanced Zoology, the first writing assignment was a review of the literature pertaining to the student term project, the second, an essay on a related topic, and the third, the final report on the project itself.

Of the five courses from Engineering, four were design courses, in which students work on a single project during one or more semesters, thus allowing the logical sequencing of assignments. For instance, in Design and Testing of Aerospace Structure, the single term project required, initially, the writing of a memo selecting a project, followed by weekly progress reports and a final report at the end of the semester. In the Petroleum engineering Design course, in addition to the final report, the students also wrote five periodic progress reports. In the Projects Lab course from Electrical Engineering, students wrote a progress report midway into the term project. In the Process and Projects Lab course, the syllabus prescribed a "written progress report" on a specified date. Although not a design course, Professional Engineering Management required three sequenced reports on a term project based on a hypothetical investment in stocks: a Portfolio Report, an Initial Investment Report, and a Final Investment Report.

Courses which used the process approach to writing instruction, and the number of practices used by each course, are listed in Table 2.

Insert Table 2 here

The number and percentage of courses using at least one of the listed practices of the processapproach to writing instruction are shown in Table 3.

Insert Table 3 here.

Discussion

This section begins with an analysis of the results summarized in Tables 2 and 3, and will continue with a discussion on faculty views of the WAC requirement. It will conclude with an examination of the role of TAs in the WAC courses included in this study.

Analysis of Results As shown in Table 2, the process approach to writing was used by fifteen of the twenty-seven courses considered for the study. Introduction to Home Economics Education from Natural Sciences and Petroleum Engineering Design from Engineering, each using three practices, were the courses using the most number of process approach practices. As shown in Table 3, Revising and Sequencing of Assignments were the two most frequently used practices while Journal Writing and Peer Critiquing were the least used.

However, the use of a practice, such as Revising, Writing to an Audience, or Sequencing of Assignments, in a particular course does not necessarily indicate that all student writing in that course is subject to that practice. Nor does it indicate a course instructor's adoption of the process approach to writing instruction. For instance, students were allowed to revise only one of the five assignments in the Introduction to Home Economics Education course. In Microbiology, only one of the three assignments specified writing for an audience. Four of the seven courses where Sequencing of Assignments was practiced were design courses in Engineering. Design courses, taken usually in the students' final year, are centered on a single project which spans one or more semesters. Thus, the sequencing of assignments appeared to be more in the nature of the course than the result of the instructors' adoption of the process approach.

Further, seven of the fifteen courses used just a single process approach practice considered for this study; six used only two of the practices.

The above observations reveal that faculty who teach WAC courses at the College of Natural Sciences and the College of Engineering at Texas show little commitment to the process approach to writing instruction. While the information contained in Tables 2 and 3 would be a sufficient basis for such an assertion, the following observations should reinforce this view.

At least eight courses included in the study required students to conduct and report on semester-long projects. These courses were Software Engineering and Special Studies in Advanced Zoology from Natural Sciences, and the design courses from Engineering: Design and Testing of Aerospace Structure, Process and Projects Lab, Process Planning and Design, Mechanical Engineering Design Methodology, Petroleum Engineering Design, and (Electrical Engineering) Projects Lab. Design courses usually require students to keep a log of daily activities, which, in "real world" projects, is important for research and legal (patenting) purposes. Since a significant number of projects do not reach their goals, the log could also enable students to speculate on

possible causes of failure. Thus, these logs, instead of being chronological records of daily activities, could easily be transformed into journals in which students could reflect on their projects, clarifying their thoughts and developing strategies for solving problems. In fact, Selfe and Arbabi (1986) have noted the advantages of student journals as effective tools for encouraging thinking and learning in a Civil Engineering course at Michigan Tech. Journals could be considered an integral part of lengthy student project, and especially in WAC courses, would have fulfilled the need for expressive writing. However, instructors of WAC courses included in this study did not appear to have recognized this possibility. As seen in table 3, only one course, Software Engineering from Natural Sciences, encouraged students to keep journals.

Revising, although observed in seven courses, was another practice which could have been used more extensively. Revision was especially feasible in Engineering courses, since they employed teaching assistants (TAs) solely for the purpose of grading the "writing content" of student papers. According to the syllabi, these TAs worked 20 hours per week, allowing regular faculty who taught the WAC courses in Engineering to focus on the subject matter content of student papers. Although the availability of TAs significantly lessened the time regular faculty spent on grading papers, only five Engineering courses encouraged students to revise their papers. However, it must be noted that "English" TAs were not available to courses from Natural Sciences, although two courses did encourage students to revise.

In addition to Journal Writing and Revising, Peer Critiquing could have been used more extensively. Since all the WAC courses were offered at upper-division level, the students enrolled in these courses were invariably majoring in a field related to the course. For instance, all the students in the Electrical Engineering Projects Lab course were Electrical Engineering majors. (This was in contrast to the heterogeneous backgrounds of students in a typical composition class taught by English department faculty.) Thus, peer critiquing would not only allow students to assist each other in writing, but would also allow a critique of the subject matter content of the papers. However, only the Software Engineering course from Natural Sciences allowed peer critiquing. When queried about the absence of this useful practice in their courses, two faculty members stated that peer critiquing would lead to plagiarism.

As noted earlier, a significant number of courses included in this study require semester-long projects, either as research papers or as design projects. Since most project and research paper topics were selected by the students, the writing of a proposal before the commencement of the project appeared to be justified. A proposal, since it includes a statement of the problem and a procedure and schedule for solving it, allows a student to interact with a course instructor on a the planning and execution of a project. Accordingly, proposals, like journals, could be considered an integral part of some courses, besides being a practice related to the process approach. However, none of the design courses in Engineering required proposals.

Although eleven courses required students to perform laboratory experiments in groups of two or more, collaborative writing was another process-approach practice largely ignored by course instructors. Only two courses, both from Engineering, allowed collaborative writing. As in peer critiquing, instructors appeared to fear extensive plagiarism if collaborative writing was allowed.

Design courses in Engineering require students to work on a "real world" problem-solving project for an actual or hypothetical client. (These courses contrast with lab courses, which usually require students to demonstrate their mastery of concepts and information presented in lectures.) Thus, design courses offer instructors a natural opportunity to employ another process approach practice--writing for an audience. However, none of the design courses specified students to direct their writing to an audience other than the course instructor, although the practice was observed in three other courses.

Sequencing of assignments, observed in seven courses, was used more often than most practices. In courses which featured semester-long projects, periodic progress reports and final reports would be warranted by the nature of the course itself. Accordingly, the sequencing of assignments could not necessarily be considered an indication of course instructors' adoption of the process approach.

Faculty Views of the WAC Requirement As stated earlier, the courses included in this study were identified in semesterly course schedules as belonging to the WAC program. Eight instructors, one from Natural Sciences and the rest from Engineering, also noted the affiliation in their course syllabi.

In Mineral Resources from Natural Sciences, a two line reference noted that the WAC requirement was "at least three writing activities . . . total[ing] at least 10 typewritten, double-spaced pages (about 4,000 words)." In Engineering courses, the affiliation was referred to in greater detail. For instance, in Engineering Economy and Construction Management, the syllabus states that, in order to meet the WAC requirement,

> each student will be required to prepare three papers during the semester. Each paper must be at least 1,000 words in length and a total of at least 4,000 words for all three. Credit for these papers will be at least 40% of the course grade. Grading these papers for composition and grammar will be by qualified English teaching assistant. Composition and grammar will account for at least 40% of each paper's grade. (p. 2)

Interestingly, these references often indicated the basis on which student writing would be evaluated, and how the WAC requirement would affect the course grade. In Measurements and Instrumentation from Mechanical Engineering, for instance, "content, format, style, syntax,

spelling, punctuation, grammar, and neatness" counted, while in Petroleum Engineering Design, "25% of the final grade would be based on the writing component." However, within the context of this study, the most significant aspect of the references was the instructors' repeated assumption that the WAC requirement could be fulfilled by a word count alone. In Measurements and Instrumentation, this was stated as "For the writing component of this course, the lab reports . . . will total 4000 words of writing experience," and in Contracts and Specifications, "This course has been certified as having a substantial writing component. As such, each student will be required to prepare two papers [averaging 1500 words] and a specification . . . "

Faculty attitudes toward the WAC requirement was reflected mostly in the semesterly reports submitted to the Dean of the College of Engineering. On the whole, these comments were positive. The Instructor of the Measurements and Instrumentation course from Aerospace Engineering noted that "70% of the students showed a substantial improvement" in writing ability. In Process Planning and Design, the instructor noted that "student writing improved greatly in the course." In Contracts and Specifications, the writing component was considered to be valuable to the graduating seniors who would be writing "letters or reports after graduation." In Petrophysics and Fluid Flow, the students were observed to be "unusually good at learning technical writing."

However, some instructors indicated their reservations about the WAC requirement. In Engineering Economy and Construction Management, the requirement was considered a "substantial burden" on the students. The instructor also noted the lack of progressive improvement in the students' writing. In Professional Engineering Management, the instructor complained that an extra essay was included merely to comply with the WAC requirement. In Measurements and Instrumentation from Mechanical Engineering, despite the WAC requirement, students did not "progress well" in their writing.

The Role of TAs in the WAC Program During the 1984-85 academic year, the University allocated finances to the College of Engineering to hire TAs specifically to assist instructors of WAC courses. Although no allocation was made to the Natural Sciences, the respective Deans were asked to build the allocation to their College budgets from the 1985-86 year.

Accordingly, many WAC courses in Engineering employ TA's, who are mainly graduate students in Applied Linguistics. In fact, the Civil, Electrical, Mechanical, and Petroleum Engineering departments have now hired full-time lecturers to teach Technical Communication courses at the upper-division level.

Semesterly reports by course instructors to the Engineering Dean often included comments on the activities of the TAs. Since these comments have a distinct bearing on process approach practices, they are worth quoting here.

In Design and Testing of Aerospace Structure, the instructor noted that weekly progress

reports were "spot checked for English content by the English TA." In addition, two 1-hour lectures were conducted by the TA during the semester, and student reports were "corrected" and returned to the students on a "regular basis." In Process Planning and Design, the English TA provided feedback to students "by means of lecturing and question/answer follow-up." According to the instructor of the Professional Engineering Management course, the English TA did an "acceptable job," but did not have sufficient time "to do a thorough review". In Contracts and Specifications, the TA was "helpful to students by marking errors and recommending assistance," leading to a reduction in "grammatical errors and spelling mistakes."

In Mechanical Engineering Design Methodology, the two TAs "delivered several lectures on writing," and made "extensive annotations" on student papers. In Measurements and Instrumentation from Mechanical Engineering, the TAs provided "written comments on graded papers." In Petrophysics and Fluid Flow, a lecturer in Technical Communication spent two lectures "talking to the students about effective technical Writing." In the Projects Lab course, students received help from the TA on "grammar, style, paper formats, and in the incorporation of graphics with text."

Conclusions

As stated at the beginning of this paper, the purpose of this study was to determine the extent to which selected interdisciplinary faculty at a research university practice the process approach to writing instruction. I felt that the study would contribute to the ongoing debate on who should teach academic writing, English or interdisciplinary faculty.

Course syllabi, assignment handouts, and semesterly reports of instructors from 27 WAC courses in the College of Natural Sciences and the College of Engineering at The University of Texas at Austin were analyzed to identify process approach practices. Twelve courses did not use a single process approach practice, seven courses used one, six courses used two, and two courses used three practices.

Instead of using current practices to writing pedagogy, the focus in these WAC courses appeared to be on quantity of writing (based on a predicted word count) that could be accomplished during a semester. This appears to be a result of the University administration's definition of the WAC courses at Texas as being "substantial writing component" courses. However, as stated in the discussion, instructors of the WAC courses ignored many opportunities to blend process approach practices to their courses.

In a synthesis of reports on WAC programs, Hook (1984) lists administrative support for in-service education of faculty, faculty orientation towards the process approach to writing instruction, and effective techniques of program assessment as three qualities of effective WAC

programs. As noted earlier in this paper, the WAC program at Texas has received little administrative support, no in-service workshops having being held for many years. In fact, this may be the prime reason for the Texas faculty's lack of orientation toward the process approach, as reflected in their emphasis on the product ("spot check[ing]," "correct[ing]" and "marking errors" of student papers) instead of on the writing process. The "publish or perish" attitude that prevails at research universities , added to the apparent lack of academic or monetary rewards for teaching WAC courses, would further discourage faculty from committing themselves to the more time consuming process approach. The faculty's ability as proficient writers in their disciplines with impressive publication records (Blackburn, 1980) does not necessarily make them teachers of writing.

In addition to the lack of administrative support for in-service education and the lack of faculty orientation toward the process approach, the WAC program appears to lack the third quality which Holbrook noted in successful WAC programs: effective assessment techniques. In theory, the University administration requires academic departments to obtain approval before a course is listed in the WAC program. However, according to the files kept by the academic Deans, request for the approval of at least one course was received at the end of the semester in which it was taught. During a discussion, a new faculty member told me that he became aware of the WAC affiliation only after he had taught the course. During the data collection period, two instructors were unable to give me assignment-handouts since they only gave oral assignments, a practice contradictory to the WAC approach.

Strenski (1988) has noted the crucial role played by TAs in WAC programs at research universities, and stressed the need to train TAs to integrate writing to their instruction. At UCLA, according to Strenski, the most effective form of TA training has been departmental workshops which evaluate assignments, student papers, and teacher responses to these papers. At Texas, TA training is nonexistent. In fact, a TA who was a Rhetorics major expressed her frustration at being a mere grader of student papers.

Finally, despite its limitations, the results of this study question the notion that interdisciplinary faculty actually *teach* writing. At Texas, as at the University of Michigan and at the University of California, Irvine (Strenski, 1988), the WAC course appears to be based not on current pedagogical practices, but solely on the quantity of writing. In essence, to expect interdisciplinary faculty who are largely unaware of the current composition research and pedagogy to teach writing appears to be rather unrealistic.

Acknowledgements

I wish to thank the Dean of the College of Natural Sciences, the Dean of the College of Engineering, and the Center for Teaching Effectiveness at The University of Texas at Austin for their support during my research.

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Table 1
Distribution of Assignments by Academic Departments

Department	Course Title	Number of Assignments
Natural Sciences		
Astronomy	History & Philosophy of Astronomy	03
	Archeo- & Ethno-Astronomy of the Americas	08
Botany	Lab Methods in Cell Biology	10
Chemistry	Advanced Analytical Chemistry	02
	Physical Methods for Biochemistry	02
Computer Science	Software Engineering	02
Geology	Mineral Resources	02
Home Economics	Intro. to Home Economics Education	05
	Advanced Nutrition I Laboratory	03
Microbiology	Microbiology	03
Physics	Quantum Phenomena	05
	Introductory Physics: Demonstration, Computer Simulation, and Measurement	03
Zoology	Special Studies in Advanced Zoology	03
Engineering		
Aerospace	Design & Testing of Aerospace Structure	02
	Measurements & Instrumentation	08
Chemical	Che. Eng. Fundamentals Lab	09
	Process & Projects Lab	05
	Process & Planning Design	04
Civil	Eng. Economy & Construction Management	03
	Professional Engineering Management	03
	Contracts & Specifications	01
Mechanical	Mechanical Engineering Design Methodology	04
	Measurements & Instrumentation	04
Petroleum	Petrophysics & Fluid Flow	10
	Petroleum Engineering Design	06
Electrical	Electrical Eng. Projects Lab	06
Electrical/Civil/Mechanical	Technological Innovation: Ethical Issues	11
Total:	Course Syllabi = 27	Assignments = 127

Table 2
Courses Which Practiced the Process Approach To Writing

Course Title	Number of Practices
Natural Sciences	
History & Philosophy of Astronomy	01
Software Engineering	02
Mineral Resources	02
Intro. to Home Economics Education	03
Microbiology	02
Special Studies in Advanced Zoology	01
Engineering	
Design & Testing of Aerospace Structure	01
Che. Eng. Fundamentals Lab	01
Process & Projects Lab	02
Eng. Economy & Construction Management	02
Professional Engineering Management	01
Contracts & Specifications	02
Measurements & Instrumentation (Civil Eng.)	01
Petroleum Engineering Design	03
Electrical Eng. Projects Lab	01
Total Number of Courses = 15	

Table 3

Number and Percentages of Courses Practicing the Process Approach

Practice	Number of Courses	% of Courses
Journal Writing	01	3.7
Ungraded Writing	02	7.4
Revising	07	26.0
Peer Critiquing	01	3.7
Writing Proposals	02	7.4
Collaborative Writing	02	7.4
Writing for an Audience	03	11.1
Sequencing of Assignments	07	26.0